

CLAIMS

We claim the following:

- 1 1. An apparatus, comprising:
2 a lifting device capable of lifting a pallet of bundled product from
3 a lowered position to a raised position;
4 a platform positioned on the lifting device holding the pallet of
5 bundled product;
6 a head mechanism having a holding device for lifting a top layer of
7 bundled product in a first orientation from the pallet to provide a
8 separation space between the top layer of bundled product and a next,
9 lower layer of bundled product on the pallet; and
10 a conveyor mechanism, extendible into the separation space,
11 which conveys the top layer of product away from the pallet when the top
12 layer of bundled product is lowered thereon.

- 1 2. The apparatus of claim 1, wherein the bundled product is mail
2 objects.

- 1 3. The apparatus of claim 2, wherein the mail objects are flats.

- 1 4. The apparatus of claim 1, wherein the head mechanism is a tilt head
2 mechanism and the holding device is one of a vacuum source to produce a
3 suction force and a pair of opposing arms moveable between a first
4 position and a second, closer position to lift and lower the top layer of
5 bundled product.

- 1 5. The apparatus of claim 1, wherein the platform is rotatable to orient the
2 bundled product into the first orientation from a second orientation.
- 1 6. The apparatus of claim 5, further comprising a control system for
2 controlling at least the lifting device, the platform, the head mechanism
3 and the conveyor mechanism.
- 1 7. The apparatus of claim 1, further comprising one of a bar code reader
2 and optical recognition system for reading labels on the bundled product.
- 1 8. The apparatus of claim 1, further comprising an input station, adjacent
2 to the platform when in a lowered position, wherein at least one of the
3 input station and the platform include a conveyor device which conveys
4 the pallet from the input station to the platform when the platform is in a
5 lowered position.
- 1 9. The apparatus of claim 1, further comprising a distribution conveyor
2 downstream from the conveyor mechanism, the distribution conveyor
3 including at least one diverter for diverting the bundled product to one of a
4 plurality of input feeders.
- 1 10. The apparatus of claim 9, wherein the at least one diverter is controlled
2 by a controller and the distribution conveyor is positioned substantially
3 orthogonal to the conveyor mechanism.
- 1 11. The apparatus of claim 1, wherein the lift device includes a sensor or
2 actuating system to determine a height of the lift mechanism and a load on
3 the pallet.

1 12. The apparatus of claim 1, further comprising a pallet stacker, the
2 platform including a conveying mechanism which places empty pallets on
3 the pallet stacker when the platform is in a lowered position.

1 13. An apparatus, comprising:
2 means for lifting a pallet of bundled product between a lowered
3 position and a raised position;
4 means for providing a separation space between a top layer of the
5 bundled product and an adjacent lower layer of bundled product or the
6 pallet;
7 means for transporting the top layer of the bundled product, in a
8 first orientation, separated from the adjacent lower layer of bundled
9 product or the pallet, to at least one feeding device.

1 14. The apparatus of claim 13, wherein the separation means drops the
2 top layer of bundled product onto the transporting means.

1 15. The apparatus of claim 13, wherein the separation means is one of a
2 vacuum and moveable opposing arms capable of lifting the top layer of
3 bundled product.

1 16. The apparatus of claim 13, wherein the bundled product is a bundle of
2 flats.

1 17. The apparatus of claim 13, wherein the transportation means includes:
2 a conveyer positionable within the separation space; and
3 a distribution conveyor having diverters which are moveable
4 between a first position and a second position, the diverters capable of

5 diverting the bundled product to any of the at least one feeding device
6 based on information associated with the bundled product,
7 wherein the conveyor conveys the bundled product away from the
8 separation means and towards the distribution conveyor.

1 18. The apparatus of claim 13, further comprising rotating the bundled
2 product into the first orientation from a second orientation prior to the
3 separating.

1 19. A method of feeding product, comprising the steps of:
2 placing a pallet onto a lifting platform;
3 lifting the pallet to a height such that a top layer of bundled
4 product on the pallet is higher than a conveyor system;
5 creating a separation space between the top layer of bundled
6 product in a first orientation and a lower next layer of bundled product in a
7 second orientation or the pallet;
8 dropping the top layer of bundled product onto a conveyor
9 mechanism; and
10 transporting the top layer of bundled product towards an induction
11 area of a sorter feeding mechanism.

1 20. The method of claim 19, wherein the top layer of bundled product is
2 lowered onto a conveying device for the transporting, the top layer of
3 bundled product staying in substantially a same order.

1 21. The method of claim 19, further comprising the steps of:
2 reading destination information associated with the bundled product;
3 and

4 diverting the bundled product to any of a plurality of feeding devices.

1 22. The method of claim 19, further comprising rotating the pallet so that
2 a new top bundle of product, provided after the transporting step, is rotated
3 into the first orientation for lifting and transporting thereof.